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WATER SUPPLY OUTLOOK

and

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS for

COLORADO and NEW MEXICO

UNITED STATES DEPARTMENT of AGRICULTURE ... SOIL CONSERVATION SERVICE and

> COLORADO STATE UNIVERSITY STATE ENGINEER of COLORADO and STATE ENGINEER of NEW MEXICO

Data included in this report were obtained by the agencies named above in cooperation with the Bureau of Reclamation, U.S. Forest Service, National Park Service and other Federal, State, and private organizations.

IIIIIIIIIIIII AS OF IIIIIIIIIIII MAR. 1, 1964

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Water Supply Outlook Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from advance estimates of the streamflow.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, up to 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

Streamflow forecasts are obtained by a comparison of total or maximum snow accumulation, as measured by snow water equivalent, to the subsequent spring and summer or snowmelt season runoff over a period of years. The snow water equivalent measured in selected snow courses provides most of the index to the streamflow forecast for the following season. More accurate forecasts are usually obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast procedure. Early season forecasts assume average climatic conditions through the snowmelt season.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions. Soil Conservation Service Reports may be secured from Water Supply Forecasting Unit, Soil Conservation Service, P.O. Box 2807, Portland, Oregon 97208.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
WESTERN UNITEO STATES	MONTHLY (FEBMAY)	PORTLANO. OREGON	_ ALL COOPERATORS
BASIC DATA SUMMARY	OCTOBER 1	PORTLANO, OREGON	_ ALL COOPERATORS
STATES			
ALASKA	MONTHLY (MAR MAY)	_ PALMER. ALASKA	ALASKA S.C.D.
AR I ZON A	SEMI-MONTHLY (JAN.15 - APR.1)	_ PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORAGO ANO NEW MEXICO	MONTHLY (FEBMAY)	FORT COLLINS, COLORAGO	- COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IOAHO	MONTHLY (JANJUNE)_	BOISE, IOAHO	loaho State Reclamation Engineer
MONTANA	MONTHLY (JANJUNE)_	_ BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
NEVAGA	MONTHLY (JANMAY)	RENO, NEVAGA	— NEVAGA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
ORE GON	MONTHLY (JANJUNE)_	PORTLANO, OREGON	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH	MONTHLY (JAN JUNE)_	_ SALT LAKE CITY. UTAH _	UTAH STATE ENGINEER
WASHINGTON	MONTHLY (FEB. JUNE)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEBJUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER
	PUBLISHED E	BY OTHER AGENCIES	
REPORTS	ISSUED		AGENCY
BRITISH COLUMBIA	MONTHLY (FEBJUNE)		ES SERVICE, DEPT. OF LANOS, ER RESOURCES, PARLIAMENT BLOG., , CANAOA
Carran	MONTH Y (FEG. MAY)	05 DSDT 05	WATER RECOURAGE B O DOY 300

SACRAMENTO, CALIF.

FEDERAL-STATE COOPERATIVE

SNOW SURVEYS AND WATER SUPPLY FORECASTS

for

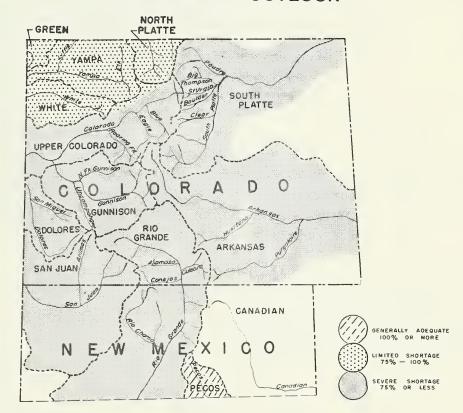
COLORADO RIVER, PLATTE RIVER ARKANSAS RIVER AND RIO GRANDE DRAINAGE BASINS

Issued
March 1, 1964

Report Prepared By
Jack N. Washichek, Snow Survey Supervisor
and
Don W. McAndrew, Assistant Snow Survey Supervisor
Fort Collins, Colorado

United States Department of Agriculture Soil Conservation Service and Colorado Agricultural Experiment Station Fort Collins, Colorado State Engineer of Colorado Denver, Colorado and State Engineer of New Mexico Santa Fe, New Mexico

WATER SUPPLY OUTLOOK



THE MAP ON THIS PAGE INDICATES THE MOST PROBABLE WATER SUPPLY AS OF THE DATE OF THIS REPORT. ESTIMATES ASSUME AVERAGE CONDITIONS OF SNOW FALL, PRECIPITATION AND OTHER FACTORS FROM THIS DATE TO THE END OF THE FORECAST PERIOD. AS THE SEASON PROGRESSES ACCURACY OF ESTIMATES IMPROVE. IN ADDITION TO EXPECTED STREAMFLOW, RESERVOIR STORAGE, SOIL MOISTURE IN IRRIGATED AREAS, AND OTHER FACTORS ARE CONSIDERED IN ESTIMATING WATER SUPPLY. ESTIMATES APPLY TO IRRIGATED AREAS ALONG THE MAIN STREAMS AND MAY NOT INDICATE CONDITIONS ON SMALL TRIBUTARIES.

WATER SUPPLY OUTLOOK FOR COLORADO AND NEW MEXICO as of

MARCH 1, 1964

OLORADO

WATER WILL BE IN SHORT SUPPLY OVER MOST OF COLORADO THIS SUMMER. MARCH 1 SNOW SURVEY INDICATE THE area in the state that has even near normal snow pack is the yampa - white area. The arkansas, rio grande and the SAN JUAN BASINS HAVE THE POOREST PROSPECTS FOR WATER THIS SUMMER. RESERVOIR STORAGE THROUGHOUT THE STATE IS MUCH BELOW LAST YEAR. THE ONLY AREA OF THE STATE WITH ANY APPRECIABLE AMOUNT OF CARRYOVER STORAGE FROM LAST YEAR IS THE SOUTH PLATTE. HERE STORAGE IS ABOUT 85% OF NORMAL. MOUNTAIN SOILS ARE DRY. VALLEY SOIL MOISTURE IN MOST CASES IS POOR. ONLY SELECT-ED SMALL AREA HAVE MEASURABLE AMOUNTS OF SOIL MOISTURE. STREAMFLOW FORECASTS CONTAINED IN THIS REPORT INDICATE THAT MOST STREAMS THROUGHOUT THE STATE WILL HAVE ABOUT 60% OF THEIR NORMAL OUTPUT FOR THE APRIL THROUGH SEPTEMBER PERIOD.

NEW MEXICO

THE WATER SUPPLY OUTLOOK FOR THE RIO GRANDE AND IT'S TRIBUTARIES IN NEW MEXICO IS FOR WELL BELOW NORMAL STREAMFLOW DURING THE 1964 SEASON. SNOW ACCUMULATION TO MARCH 1 IS ABOUT 50% OF NORMAL IN THE HEADWATERS AREA. MOUNTAIN SOIL MOISTURE AND RESERVOIR CARRYOVER STORAGE ARE BOTH CONSIDERABLY BELOW NORMAL. THE MOST PROBABLE SUMMER FLOW OF THE RIO GRANDE IS ABOUT 44% OF NORMAL ON THE UPPER RIO GRANDE TO 30% OF AVERAGE ON THE LOWER RIO GRANDE. THE PECOS SHOULD HAVE A NEAR NORMAL RUNOFF THIS SUMMER.

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WATER SUPPLY OUTLOOK BY MAJOR WATERSHED AREAS

WATERSHEDI

SOUTH PLATTE RIVER WATERSHED

Describes water supply conditions in Fort Collins, Big Thompson. Longmont, Boulder Valley, Jefferson, Teller-Park, Douglas County, Morgan, Kiowa, West Arapahoe, West Adams, East Adams, Platte Valley, Southeast Weld, and West Greeley Soil Conservation Districts.

WATERSHED II -

ARKANSAS RIVER WATERSHED

Describes water supply conditions in Lake County, Upper Arkansas, Fremont, Custer County Divide, Fountain Valley, Black Squirrel, Horse-Rush Creek, Central Colorado, Turkey Creek, Pueblo, Bessemer, Olney Boone, Cheyenne, Upper Huerfano, Stonewall, Spanish Peaks, Purgatoire, Branson Trinchera, Western Baca County, Southeastern Baca County, Two Buttes, Bent, Timpas, Northeast Prowers, Prowers, West Otero, East Otero, and Big Sandy Soil Conservation Districts.

WATERSHED III .

RIO GRANDE WATERSHED (COLORADO)

Describes water supply conditions in Rio Grande, Center, Mosca
Hooper, Mt. Blanca, Sanches, and Culebra Soil Conservation Districts
West Routt, East Routt, North Park, Upper White River,

WATERSHED IV .

RIO GRANDE WATERSHED (NEW MEXICO)

Describes water supply conditions in Lower Cebolla, Abiquiu-Vallecitos, Eastern Taos, Lindrith, Coyote-Canones, Espanola Valley, Pojoaque, Jemez, Santa Fe-Sandoval, Tijeras, Cuba, and Edgewood Soil Conservation Districts.

WATERSHED V -

DOLORES, SAN JUAN, AND ANIMAS RIVERS WATERSHED

Describes water supply conditions in San Miguel Basin. Dove Creek, Dolores. Mancos, LaPlata, Pine River, San Juan, and Glade Park Soil Conservation Districts.

WATERSHED VI -

GUNNISON RIVER WATERSHED

Describes water supply conditions in Delta, Gunnison, Cimarron, Shavano, and Uncompangre Soil Conservation Districts.

WATERSHED VII -

COLORADO RIVER WATERSHED

Describes water supply conditions in DeBeque, Lower Grand Valley, Bookcliff, Eagle County, Middle Park, Glade Park, Upper Grand Valley, Plateau Valley, South Side, and Mt. Sopris Soil Conservation Districts.

WATERSHED VIII -

YAMPA, WHITE AND NORTH PLATTE RIVERS WATERSHED

Lower White River, and Douglas Creek Soil Conservation Districts.

WATERSHED IX -

LOWER SOUTH PLATTE RIVER WATERSHED

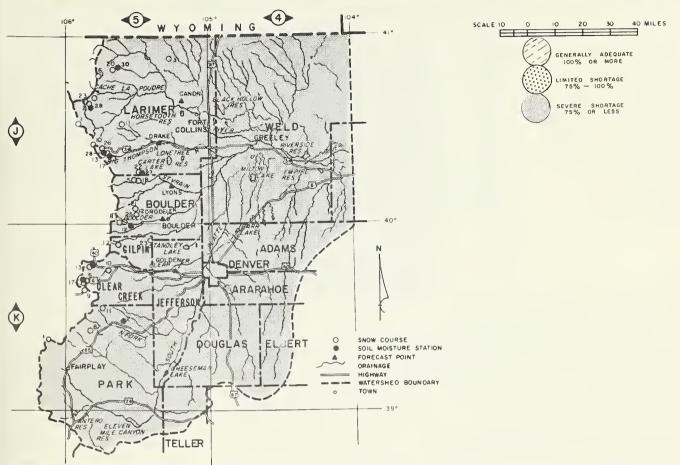
Describes water supply conditions in Sedgwick, South Platte, Haxton Peetz, Padroni, Morgan Rock Creek and Yuma Soil Conservation Districts.

SOUTH PLATTE RIVER WATERSHED IN COLORADO

as of

March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE COLORADO EXPERIMENT STATION - STATE ENGINEERS OF COLORADO AND NEW MEXICO



GENERAL -- WATER SUPPLY OUTLOOK WAS IMPROVED SLIGHTLY DURING FEBRUARY. SPOTTY SNOW MAKES FORECASTING DIFFICULT. SOME AREAS ARE INDICATING RATHER HIGH SNOW WHILE RIGHT NEXT DOOR THE SNOW PACK IS LIGHT. THERE WILL BE SHORTAGES OF WATER OVER THE ENTIRE BASIN, ESPECIALLY LATE IN THE SUMMER.

SNOW — SNOW PACK WAS SLIGHTLY IMPROVED DURING FEBRUARY. ALTHOUGH THE SNOW FALL IS STILL MUCH BELOW NORMAL. THE ENTIRE SOUTH PLATTE BASIN NOW HAS ABOUT 65% OF NORMAL SNOW. NOT MUCH TIME REMAINS TO BUILD THE MUCH NEEDED SNOW PACK. CURRENT SNOWFALL IN THE PLAINS AREA IS SLIGHTLY BETTER THAN AVERAGE.

RESERVOIR STORAGE -- ALTHOUGH THE CARRYOVER STORAGE IS BELOW NORMAL, IT WILL BE OF MUCH HELP AS A SUPPLEMENTAL SUPPLY.

STORAGE IN THE MAJOR RESERVOIRS WAS THE FACTOR THAT SAVED MANY CROPS LAST YEAR AND WILL HAVE A SIMILAR ROLE THIS YEAR
UNLESS SUMMER RAINFALL IS MUCH ABOVE NORMAL.

SOIL MOISTURE -- SOIL MOISTURE IN THE MOUNTAINS IS BELOW NORMAL AS WAS THE FALL PRECIPITATION. SOME OF THE HIGH ELEVA-TION PRECIPITATION STATIONS INDICATED LESS THAN A THIRD OF NORMAL FALL RAINFALL.

FORECASTS -- FORECASTS ARE UP SLIGHTLY FROM A MONTH AGO, BUT STILL IN THE CRITICAL AREA. FORECAST RANGE FROM 65% OF NORMAL ON CLEAR CREEK TO 74% OF NORMAL ON THE BIG THOMPSON.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

ISSUED BY: SOIL CONSERVATION SERVICE

F. A. Mark, State Conservationist, Colorado R. G. Wilson, Area Conservationist, Littleton, Colorado

						ECORD
SNOW COURSE		DATF OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT	WATER CONTENT (INCHES)	
		JORVEY	1,1110,113;	incha)	LAST YEAR	1943 - 57
OUTH PLATTE RIVER AND TRIBUTARIE	3					
Baltimore	5K23	2-29	20	4.6	6.0	
Berthoud Falls	5K13	2-29	36	9.1	9.5	11.8*
Big South	533	2-29	8	1.4	2.9	2.2
Boulder Falls	5J25	2-27	29	7.4	10.7	10.3*
Cameron Pass (A)	5J1	2-28	66	19.1		18.0
Chambers Lake	5J2	2-29	23	4.8	7.4	7.0
Copeland Lake	5J18	2-27	11	1.9	4.0	4.9×
Deadman Hill (A)	536	2-28	52	13.0		12.2
Deer Ridge	5317	2-28	13	2.2	4.3	4.9*
Empire	5K10	2-29	22	4.0	4.0	5.0×
Geneva Park	5K11	2-28	9	1.8	2.6	3.8×
Grizzly Peak (B)	5K9	2-28	35	8.1	12.4	14.9
Hidden Valley	5J13	2-26	28	5.1	8.2	9.4
Hoosier Pass	5K1	2-28	29	6.5	8.4	10.0
Hour Glass Lake	5J11	2-27	18	3.6	5.4	6.6
Jefferson Creek	5K8	2-27	19	4.0	5.3	7.5
Lake Irene (B)	5J10		50	12.5	15.9	18.6
Long's Peak	5J22		20	4.3	7.1	10.1*
Lost Lake	5J23		29	6.4	9.1	10.4*
Loveland Pass	5K5	2-28	32	6.7	11.1	12.5
Loveland Lift No. 1	5K24	2-28	50	12.1	14.7	
Pine Creek	5J31	2-27	8	1.2	1.2	
Red Feather	5J20	2-27	22	4.5	5.3	6.9
Two Mile	5J26	2-28	33	7.0	10.3	11.9*
University Camp	5J8	2-27	38	11.1	15.1	17.7
Ward	5J21	2-27	17	2.9	4.4	5.6*
Wild Basin	5J5	Est.	25	6.2	9.6	11.9

RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE	THIS YEAR	LAST YEAR	15 YEAR AVERAGE 1943 - 57
Antero Barr Iake Black Hollow Boyd Iake Cache Ia Poudre Carter Iake* Chambers Iake Cheeseman Cobb Iake Eleven Mile Fossil Creek Gross				
Halligan Horsetooth * Iake Loveland Lone Tree Mariano Marshall Marston Milton Standley Terry Iake Union Windsor	6.4 143.5 13.2 8.3 5.2 10.3 17.2 24.4 18.5 8.2 12.7	2.7 81.7 10.5 8.0 5.3 1.2 10.5 12.6 6.9 9.4 2.5	3.7 91.6 0.5 15.2 14.6 7.0 5.7 10.5 13.2	1.9 88.0 5.8 5.6 2.2 1.6 14.2 9.7 9.6 4.3 6.7 8.1

MEASURED FIRST OF MONTH

SOIL MOISTURE

STATION	DATE OF SURVEY	(INCHES)	THIS	LAST YEAR	AVERAGE (ALL PAST DATA)
Alpine Camp Beaver Dam Feather Guard Station Hoop Creek Hoosier Pass Kenosha Pass Laramie Road Two Mile	11-20 11-19 11-05 11-20 12-01 11-05 11-05 11-05	10.1 6.9 4.9 7.8 4.4 12.4	4.2 3.1 3.6 4.9 2.8	2.9 3.2 4.0 2.7 2.9 4.0 1.9 6.2 4.1	3.4

ALL PROFILES 4 FEET DEEP

NOTE: * - 1943 - 57 (ADJUSTED AVERAGES)
NS - NO SURVEY
(A) - AIR OBSERVED
(B) - ON ADJACENT DRAINAGE

STREAMFLOW FORECAST (1,000 AC. FT.) APRIL THROUGH SEPTEMBER

STREAM AND STATION	FORECAST APRIL - SEPT. A	THIS YEAR % VERAGE		This Report Prepared by
Big Thompson at Drake (2) Boulder at Orodell Cache La Poudre at Canon(Clear Creek at Golden (3) Saint Vrain at Lyons	39 1) 130	74 70 69 73 65	55	Jack N. Washichek and Don W.McAndrew Soil Conservation Service Colorado State University Fort Collins, Colorado

(1) Observed flow minus diversions from Michigan, Colorado and Laramie rivers, plus diversions for irrigation and municipal use above station.

(2) Observed flow plus by-pass to power plants.

(3) Observed flow minus diversions through Jones Tunnel.

RETURN IF NOT DELIVERED

UNITED STATES

DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Snow Survey Colorado State University Fort Collins, Colorado

OFFICIAL BUSINESS

ARKANSAS RIVER WATERSHED IN COLORADO

as of March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE COLORADO EXPERIMENT STATION - STATE ENGINEERS OF COLORADO AND NEW MEXICO



GENERAL -- THE OUTLOOK FOR IRRIGATION SUPPLIES WAS SOMEWHAT IMPROVED BY A COUPLE OF FRONT RANGE STORMS. THESE DID NOT
PENETRATE TO THE HIGH MOUNTAINS, BUT DID LAY DOWN A GOOD AMOUNT OF LOW SNOW. WATER SUPPLIES WILL STILL BE CRITICALLY
SHORT OVER THE ENTIRE ARKANSAS VALLEY. LATE SEASON SHORTAGES WILL BE SEVERE.

SNOW -- OVERALL THE SNOW PACK HAS IMPROVED FROM LAST MONTHS 52% OF NORMAL TO 66%. MOST OF THE IMPROVEMENT WAS IN THE LOW ELEVATION FRONT RANGE STORMS. HIGH ELEVATION SNOW PACK REMAINS ABOUT HALF OF THE 15 YEAR AVERAGE.

RESERVOIR STORAGE -- PRACTICALLY NO CARRYOVER STORAGE EXISTS ON THE ARKANSAS. TWIN LAKES RESERVOIR CONTAINS THE MOST STORAGE AND IT IS ONLY ABOUT 70% OF NORMAL. CARRYOVER STORAGE WILL BE OF LITTLE HELP THIS SUMMER.

SOIL MOISTURE -- MOUNTAINS SOILS ARE DRY. CONSIDERABLE AMOUNTS OF SNOW WATER WILL BE REQUIRED TO FILL THE SOILS.

VALLEY SOILS ARE GENERALLY DRY, HOWEVER, THE MOISTURE IN THE SOIL NEAR THE FRONTAL RANGE, IS CONSIDERABLY BETTER. THE AREA AROUND PUEBLO IS STILL DRY.

FORECASTS — FORECASTS ARE SOME OF THE LOWEST ON RECORD, EXCEPT ON THE CUCHARAS. THE CUCHARAS IS EXPECTED TO FLOW FAIRLY GOOD DUE TO THE LOW ELEVATION SNOW STORM THAT DROPPED CONSIDERABLE SNOW DURING FEBRUARY. FORECASTS FOR THE ARKANSAS MAIN STEM ARE FOR SLIGHTLY BETTER THAN HALF THE NORMAL FLOW.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

NOW		CURRE	NT INFORMA	TION	PAST RECORD	
SNOW COURSE	NO,	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER CO	'S1
RKANSAS RIVER						1943 - 5
Bigelow Divide Blue Lakes Bourbon Cooper Hill Cucharas Pass East Fork Four Mile Park Fremont Pass Garfield LaVeta Pass (B) Monarch Pass St. Elmo (A) Tennessee Pass Tomichi Twin Lakes Tunnel Westcliffe	5L3 5M6 5M5 6K23 5M7 6K17 6K8 6L8 5M1 6L4 6L5 6K2 6L7 6K3 5L2	2-27 2-25 2-26 2-25 2-26 2-27 2-26 2-28 2-25 2-28 2-27 2-27 2-28 2-27 2-28 2-28 2-27 2-28 2-28	38 24 30 32 38 26 12 36 32 30 42 30 27 38 21 26	7.9 5.2 5.5 5.3 10.1 5.2 2.48 7.8 9.8 6.0 5.1 9.8 5.0 5.4	4.2 3.8 6.7 7.4 2.9 10.6 12.7 5.4 14.3 -7 7.1 11.0 5.5 3.7	8.9 3.7 13.2 8.4 14.9 10.1 7.9 5.4

RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIH	USABLE CAPACITY	THIS YEAR	LAST YEAR	15 YEAR AVERAGE 1943 - 57
Adobe Creek Clear Creek Cucharas Great Plains Horse Creek John Martin Meredith Model Sugar Loaf Twin Lakes	61.6 11.4 40.0 150.0 26.9 366.6 41.9 15.0 17.4 57.9	0 7.8 0.7 0 0 6.7 0 5.7 4.2 16.8	0 8.6 0 11.5 1.7 17.9 10.0 3.1 6.6 23.0	21.6 5.0 4.7 51.3 7.4 52.6 14.4 2.5 7.7 23.0

MEASURED FIRST OF MONTH

SOIL MOISTURE

SOIL	SOIL MOISTURE								
STATION	DATE OF SURVEY	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	AVERAGE (ALL PAST DATA)				
Garfield King LaVeta Pass Leadville Twin Lakes Tunnel	11-8 11-8 1-27 12-2 11-6	6.7 3.3 11.9 7.8 4.5	2.4 0.8 3.7 4.1 1.0	1.3 1.6 3.6 3.5 0.9	3.3 1.8 7.0 3.9 2.1				

ALL PROFILES 4 FEET DEEP

NOTE: * - 1943 - 57 (ADJUSTED AVERAGES)
NS - NO SURVEY
(A) - AIR OBSERVED
(B) - ON ADJACENT DRAINAGE

This Report Prepared by

STREAMFLOW FORECAST (1,000 AC. FT.)

APRIL THROUGH SEPTEMBER							
STREAM AND STATION	FORECAST APRIL - SEPT,	THIS YEAR % AVERAGE	AVERAGE 1943-57				
Arkansas at Pueblo (1) Arkansas at Salida (1) Cucharas near LaVeta Pur gatoire at Trinidad	192 190 12 25	56 56 85 48	342 339 14 52				

(1) Observed flow plus change in storage in Clear Creek, Twin Takes, and Sugar Loaf Reservoirs minus diversions through Busk-Ivanhoe and Twin I e Tunnels and Ewing, Fremont Pass, Wurtz and Columbiane Ditches.

RETURN IF NOT DELIVERED

Soil Conservation Service Colorado State University Fort Collins, Colorado

Jack N. Washichek and Don W. McAndrew

UNITED STATES

DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

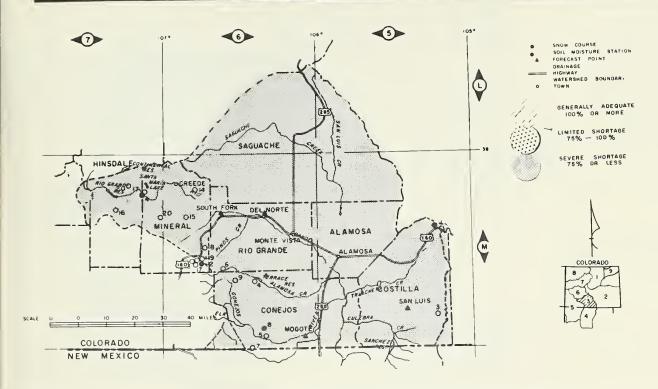
Snow Survey Colorado State University Fort Collins, Colorado

OFFICIAL BUSINESS

UPPER RIO GRANDE WATERSHED IN COLORADO

as of March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE COLORADO EXPERIMENT STATION - STATE ENGINEERS OF COLORADO AND NEW MEXICO



GENERAL -- WATER SUPPLIES WILL BE SHORT OVER THE ENTIRE SAN LUIS VALLEY THIS SUMMER. WATER CONSERVATION WILL BE A KEY
WORD AND DEEP WELL WILL HAVE TO BE RELIED ON TO A GREAT EXTENT. IATE SEASON SUPPLIES WILL BE ESPECIALLY SHORT.

SNOW -- THE SNOW PACK OVER THE BASIN IS ONLY ABOUT 55% OF NORMAL WITH THE EXCEPTION OF THE SANGRE DE CRISTO RANGE. THIS
AREA HAS CAUGHT PART OF AN EAST SLOPE STORM AND THE SNOW PACK IS 75% OF NORMAL.

SOIL MOISTURE -- SOIL MOISTURE IN THE MOUNTAINS IS POOR. VALLEY SOIL MOISTURE IS REPORTED AS FAIR TO POOR.

RESERVOIR STORAGE -- CARRYOVER STORAGE IS ONLY ABOUT 30% OF NORMAL AND WILL BE OF LITTLE HELP THIS YEAR.

FORECASTS -- STREAMFLOW WILL VARY FROM 67% OF THE 1943-57 AVERAGE ON THE CONEJOS TO 54% OF NORMAL ON THE SOUTH FORK.

ANOTHER MONTH REMAINS IN WHICH SNOW GENERALLY INCREASES. UNLESS SNOW FALL IS EXTREMELY HEAVY DURING MARCH, STREAMFLOW THROUGHOUT THE BASIN WILL BE DEFICIENT. FALL PRECIPITATION WAS MUCH BELOW NORMAL OVER THE ENTIRE BASIN. MOST OF
THE AREAS RECEIVED LESS THAN 1/3 OF NORMAL RAINFALL. A FEW LOCALS REPORTED HIGHER AMOUNTS, BUT THESE WERE GENERALLY
LESS THAN HALF.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

SNOW		CURRE	NT INFORMA	TION	PAST RECORD		
SNOW COURSE	NO.	DATE	SNOW	WATER	WATER C	23)	
		SURVEY	(INCHES)	(INCHES)	LAST YEAR	AVERAGE 1943 - 57	
RIO GRANDE IN COLORADO							
Cochetopa Pass	6L6	2-26	19	4.5	3.1	4.8*	
Hiway	6M19	2-27	37	9.4	14.2		
Lake Humphreys (A)	6M15	2-25	18	3.8		6.2*	
Pass Creek	6M18	2-27	27	6.2	7.2		
Pool Table (A)	5M14	2-25	19	3.8		4.8*	
Porcupine (A)	7M20	2-25	20	4.0		9.0*	
Red Mountain Pass (B)	7M1.5	2-27	59	15.5	18.6	22.5*	
Santa Maria	7M17	2-27	14	2.9	2.2	4.7	
Upper Rio Grande	7M16	2-25	19	2.8	4.2	6.8	
Wolf Creek Pass	6M1	2-27	47	11.5	18.0	25.4	
Wolf Creek Summit (B)	6M17	2-27	47	11.1	17.2	24.7*	
ALAMOSA RIVER							
Silver Lakes	6M4	2-27	24	6.5	2.9	6.2	
Summitville (A)	6M6	2-25	31	8.1	11.0	16.2	
CONEJOS RIVER	/						
Cumbres Pass (A)	6M7	2-25	34	8.2		16.8	
Platoro (A)	6M9	2-25	33	7.9		14.4	
River Springs	6 M 5	2–28	18	4.6	2.8	7.4	
SANGRE DE CRISTO RANGE (COLO.)	F34/	0.05					
Blue Lakes (B)	5M6	2-25	24	5.2			
Cucharas Pass (B)	5M7	2-25	38	10.1	6.2	0.7	
Culebra	5M3	2-28	25 30	5.5		8.7	
LaVeta Pass	5Ml	2-25	50	7.8	5.4	0.4	

NOTE: • - 1943 - 57 (AOJUSTED AVERAGES)
NS - NO SURVEY
(A) - AIR OBSERVEO
(B) - ON AOJACENT DRAINAGE

This Report Prepared by Jack N. Washichek and Don W. McAndrew Soil Conservation Service Colorado State University Fort Collins, Colorado

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DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Snow Survey Colorado State University Fort Collins, Colorado

OFFICIAL BUSINESS

RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE CAPACITY	THIS YEAR	LAST YEAR	15 YEAR AVERAGE 1943 - 57
Continental Platoro Rio Grande Sanchez Santa Maria Terrace	26.7 60.0 51.1 103.2 43.6 17.7	1.0 3.0 4.1 5.2 3.1 1.1	3.6 4.0 9.5 5.5 4.1 3.2	7.3 4.7 11.1 9.6 7.5 2.6
1	AEASUREO FI	RST OF MONT	н	

SOIL MOISTURE

STATION	DATE OF SURVEY	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	AVERAGE (ALL PAST DATA)
Alberta Park		8.2	3.3	4.3	4.8
Bristol View		6.1	0.2	3.7	4.4
Ia Veta Pass		11.9	3.7	3.6	7.0
Mogote		10.7	NS	4.5	5.3

ALL PROFILES 4 FEET DEEP

STREAMFLOW FORECAST (1,000 AC. FT.)

APRIL THROUGH SEPT	EMBER		
STREAM ANO STATION	FORECAST APRIL - SEPT.	THIS YEAR % AVERAGE	AVERAGE 1943-57
Alamosa above Terrace Conejos near Mogote Culebra at San Luis (2) Rio Grande nr. Del Norte Rio Grande at Thirty Mile Bridge (1) South Fork at South Fork	45 132 14 285 86 65	63 67 58 58 64 54	71 197 24 491 135 121

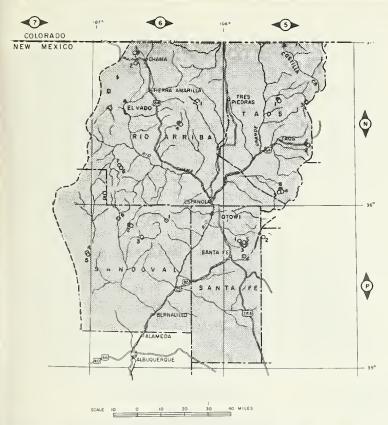
- (1) Observed flow plus change in storage in Santa Maria, Rio Grande and Continental Reservoir
- (2) Observed flow plus changes in storage in Sanchez Reservoir

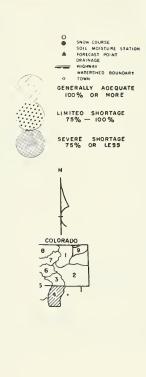
RIO GRANDE WATERSHED IN NEW MEXICO

as of

March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE COLORADO EXPERIMENT STATION - STATE ENGINEERS OF COLORADO AND NEW MEXICO





GENERAL — AGAIN THIS YEAR CONSERVATION OF WATER WILL BE A MUST TO PRODUCE AVERAGE CROPS. SNOW FALL HAS BEEN LIGHT, SOILS ARE DRY AND RESERVOIR STORAGE WILL BE OF LITTLE ASSISTANCE. THERE ARE LESS THAN 50 DAYS REMAINING WHEN SNOW CAN BE EXPECTED IN THE HIGH MOUNTAIN AREAS.

SNOW — SNOW PACK ON THE SANGRE DE CRISTO SIDE OF THE RIO GRANDE VALLEY HAS IMPROVED SLIGHTLY. OTHER SOURCES OF WATER FOR THE RIO GRANDE STILL HAVE VERY DEFICIENT SNOW PACKS. SNOW PACK VARIES FROM 50% OF NORMAL IN THE HEADWATER AREA TO 75% IN THE SANGRE DE CRISTO MOUNTAINS. SNOW BUILD UP IS NEAR NORMAL ON THE PECOS.

RESERVOIR STORAGE — CARRYOVER STORAGE IN EL VADO IS ONLY 2,400 ACRE FEET. STORAGE IN ELEPHANT BUTTE IS EXTREMELY LOW.

STORAGE FIGURES FOR THE PECOS AND CANADIAN DRAINAGES IS ALSO CONSIDERABLY LOWER THAN LAST YEAR.

FORECASTS -- THE PECOS SHOULD HAVE NEAR NORMAL RUNOFF WHILE THE MAINSTEM OF THE RIO GRANDE CAN EXPECT MUCH BELOW NORMAL STREAMFLOW. THE SMALL TRIBUTARY STREAMS WHOSE HEADWATERS ARE IN THE SANGRE DE CRISTO SHOULD FLOW ABOUT 75% OF NORMAL, BUT WILL EXPERIENCE LATE SEASON SHORTAGE.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

Rio Grande at San Marcial is Forecast at 20% of the Elephant Butte Irrigation District's Normal.

This Report Prepared by
Jack N. Washichek and Don W. McAndrew
Soil Conservation Service
Colorado State University
Fort Collins, Colorado

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UNITED STATES

DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Snow Survey Colorado State University Fort Collins, Colorado

OFFICIAL BUSINESS

RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE CAPACITY	THIS YEAR	L AST YEAR	15 YEAR AVERAGE 1943 - 57
Alamorgordo	109.7	40.0	83.0	55.4
Caballo	344.0	34.2	94.6	170.4
Elephant Butte	2195.0	158.2	422.0	606.6
El Vado	192:1	2.4	2.5	34.9
McMillan-Avalon	44.5	18.0	19.4	13.4
Red Bluff (Tex)	307.0	34.2	28.4	91.7
Conchas	600.0	100.7	291.3	262.5

MEASURED FIRST OF MONTH

SOIL MOISTURE

STATION	DATE OF SURVEY	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	AVERAGE (ALL PAST DATA)
Alberta Park Aqua Piedra Bateman Big Tesuque Bristol View Chamita(N.M.) Fenton Hill Mogote(Colo) Red Summit Rio En Medio Taos Canyon	1-28 11-19 10-28 11-29 1-28 1-28 12-10 Ns 11-19 11-29 11-19	7.2 6.7 3.7 6.1 8.0 6.5 10.7 4.8 3.5	3.3 2.2 0.7 1.9 1.2 0.3 4.7 Ns 2.4 1.8 2.0	4.3 3.3 2.0 0.1 1.7 1.2 	4.8 3.5 2.2 1.2 4.4 2.0
	ALL DDC	DEILES 4 F	COT DECK	,	

STREAMFLOW FORECAST (1,000 AC. FT.)

APRIL THROUGH SEPTEMBER STREAM AND STATION FORECAST APRIL -VERAGE 1943-57 Costilla at Costilla 15 56 27 Pecos at Pecos 48 Rio Chama nr. La Puenta 210 108 51 Rio Grande at Otowi(10)* 280 633 44 Rio Grande at San Marcial 434 (10)* 140 32 Rio Hondo nr Valdez 78 18 14 24 Red River at Questa** 75 18

(10) Observed flow plus changes in storage in Santa Maria, Rio Grande, Continental, Terrace, Sanchez, Platoro and El Vado Reservoirs.

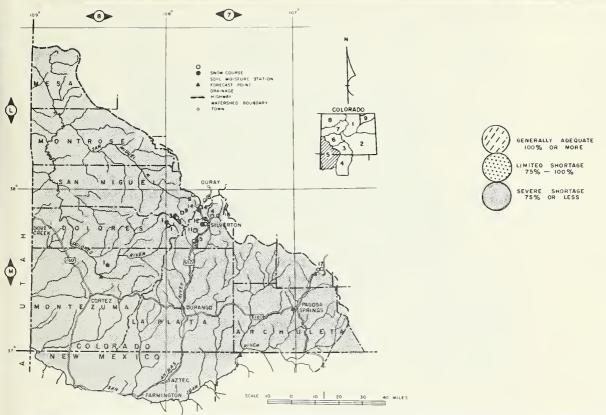
* Rio Grande at Otowi and Rio Grande at San Marcial Forecast and Average Mar-July inclusive.

**Red River at Questa Forecast and Average April-July inclusive.

SAN MIGUEL - DOLORES - ANIMAS - SAN JUAN WATERSHEDS IN COLORADO AND NEW MEXICO

as of March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE COLORADO EXPERIMENT STATION - STATE ENGINEERS OF COLORADO AND NEW MEXICO



GENERAL -- WATER SUPPLIES WILL BE EXTREMELY SHORT IN THIS AREA. WATER CONSERVATION WILL BE A NECESSITY FOR ANYONE USING DIRECT FLOW RIGHTS. ONLY SCANT TIME REMAINS TO BUILD UP THE SNOW PACK FOR MUCH NEEDED WATER.

SNOW -- SNOW COVER IS THE POOREST IN MANY YEARS. SEVERAL SNOW COURSES ONLY HAVE 35% OF THE NORMAL SNOW FOR THIS TIME OF YEAR. THE SAN JUAN DRAINAGE HAS THE POOREST SNOW PACK WITH 45% OF THE 1943-57 AVERAGE. THE DOLORES SNOW IS 56% OF NORMAL AND THE ANIMAS HAS 54% OF NORMAL. ONLY ONCE IN HISTORY OF SNOW SURVEYS HAS THE SNOW FALL ABOVE SILVERTON BEEN SO LOW.

RESERVOIR STORAGE -- STORAGE IN THE MAJOR RESERVOIRS IS LESS THAN NORMAL, BUT WILL BE OF SOME ASSISTANCE TO USERS UNDER THEIR DITCHES.

FALL PRECIPITATION -- FALL PRECIPITATION AT SELECTED HIGH ELEVATION STATIONS WAS ONLY ABOUT 1/3 OF NORMAL. THIS LEFT THE MOUNTAIN SOILS DRY. VALLEY SOILS ARE REPORTED IN FAIR CONDITION FOR PLANTING.

FORECASTS — FORECASTS WILL BE IN THE 50% TO 60% RANGE THROUGHOUT THE BASIN. IATE SEASON WATER SUPPLIES WILL BE ESPECIALLY CRITICAL.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

ISSUED BY: SOIL CONSERVATION SERVICE

F. A. Mark, State Conservationist,
Colorado
Benny Martin, Area Conservationist,
Monte Vista, Colorado
E. A. Nicholson, Area Conservationist,
Crand Junction, Colorado

C. A. Tidwell, State Conservationist
New Mexico

Glen E. Murray, Area Conservationist Albuquerque, New Mexico

SNOW		CURRENT INFORMATION			PAST RECORD		
SNOW COURSE	NO.	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER CO		
SAN JUAN RIVER Chama Divide (B) Chamita (B) Upper San Juan Wolf Creek Pass (B) Wolf Creek Summit ANIMAS RIVER Cascade Ironton Park (B) Howardville Mineral Creek Molas Lake Red Mountain Pass Silverton Sub-Station Spud Mountain DOLORES RIVER Lizzard Head Rico Telluride Trout Lake	6N2 6N3 6M3 6M1 6M17 7M5 7M6 7M13 7M14 7M12 6M19 7M4 7M11 7M3 7M1 7M9	2-27 2-27 2-27 2-27 2-27 2-27 2-26 2-27 2-27	5 22 53 47 47 22 39 23 28 22 59 14 33 27 14 23 29	0.7 4.4 13.4 11.5 11.1 4.3 10.2 4.3 5.5 4.5 15.5 2.5 8.1 7.0 3.4 5.2 6.3	2.2 8.8 20.5 18.0 17.2 7.5 10.0 6.9 7.7 8.1 18.6 3.7 14.5 11.6 5.7 5.1 10.8	4.4 9.3 27.6 25.4 24.7* 11.3 10.3 8.7* 12.5* 22.5* 5.1 20.3* 13.2 7.9 6.7 11.5*	

RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE	THIS YEAR	LAST YEAR	15 YEAR AVERAGE 1943 - 57
Groundhog	21.7		5.0	7.0
Vallecito	126.3		51.7	41.0

MEASURED FIRST OF MONTH

SOIL MOISTURE

STATION	DATE OF SURVEY	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	AVERAGE (ALL PAST DATA)
Dolores Lizzard Head	11-13 11-15 11-15 11-13 11-13 11-15	9.1 19.6 11.8 5.7 9.4 13.8	5.3 9.8 8.1 3.4 1.5 5.9	6.4 4.7 7.2 3.1 4.3 9.1	6.7 4.3 8.2 3.6 4.2 9.1

ALL PROFILES 4 FEET DEEP

STREAMFLOW FORECAST (1,000 AC. FT.)

APRIL THROUGH SEPTEMBER						
STREAM AND STATION	FORECAST APRIL - SEPT.	THIS YEAR % AVERAGE	AVERAGE 1943-57			
Animas at Durango	300	63	475			
Dolores at Dolores	167	60	279			
Florida near Durango	33	53	62			
LaPlata at Hesperus	15	53	28			
Los Pinos near Bayfield*	132	60	220			
Piedra Creek near Piedra	100	53	186			
San Juan at Rosa, N.M.	300	51	587			

* OBSERVED FLOW PLUS CHANGES IN STORAGE IN VALLECITO RESERVOIR

This Report Prepared by Jack N. Washichek and Don W. McAndrew Soil Conservation Service Colorado State University Fort Collins, Colorado

POSTAGE AND FEES PAID U.S. DEPARTMENT OF AGRICULTURE

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NOTE: • - 1943 - 57 (ADJUSTED AVERAGES)

NS - NO SURVEY

(A) - AIR OBSERVED

(B) - ON ADJACENT DRAINAGE

Snow Survey Colorado State University Fort Collins, Colorado

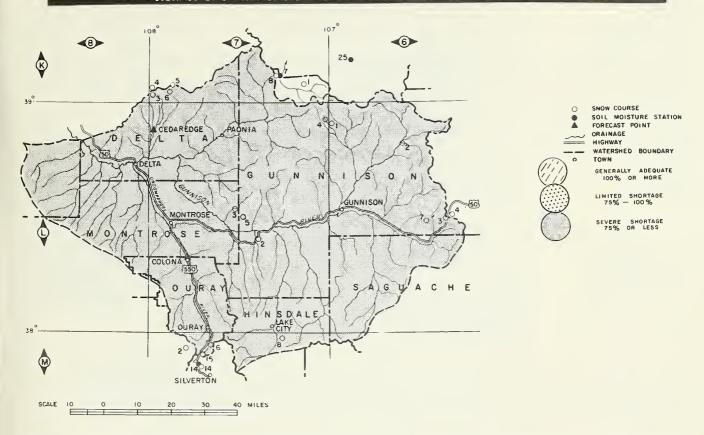
OFFICIAL BUSINESS

GUNNISON RIVER WATERSHED IN COLORADO

as of

March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE COLORADO EXPERIMENT STATION - STATE ENGINEERS OF COLORADO AND NEW MEXICO



GENERAL -- EARLY RUNOFF OF THE GUNNISON AND UNCOMPANGE RIVERS SHOULD BE ADEQUATE FOR NORMAL USE, BUT LATE SEASON WATER WILL BE EXTREMELY SHORT. EARLY MATURING CROPS OR CROPS THAT REQUIRE LESS AMOUNTS OF WATER WILL HAVE THE BEST CHANCE OF SURVIVAL.

SNOW -- SNOW PACK IS EXTREMELY SPOTTY. SOME AREAS HAVE NEAR NORMAL SNOW WHILE OTHER AREAS HAVE ONLY A 1/2 THE NORMAL SNOW PACK. THE UNCOMPANGRE DRAINAGE HAS AN OVERALL SNOW PACK OF 70% AND THE GUNNISON'S SNOW FALL HAS BEEN ABOUT 60% OF NORMAL.

RESERVOIR STORAGE -- STORAGE IN TAYLOR RESERVOIR IS 42,500 ACRE FEET OR 70% OF THE 1943-57 NORMAL.

PRECIPITATION -- FALL PRECIPITATION WAS ONLY SLIGHTLY BELOW NORMAL. THIS LEFT THE MOUNTAIN SOILS WITH SOME MOISTURE, BUT STILL LESS THAN AVERAGE. VALLEY SOIL MOISTURE IS REPORTED AS ONLY FAIR. SOME AREAS ARE EVEN REPORTING POOR CONDITIONS.

FORECASTS -- FORECASTS ARE HIGHER THAN IN MOST AREAS OF THE STATE, BUT STILL WELL BELOW NORMAL. THE GUNNISON SHOULD FLOW ABOUT 830,000 ACRE FEET WHICH IS 60% OF AVERAGE. THE UNCOMPANGRE SHOULD FLOW SLIGHTLY BETTER, PROBABLY IN THE 75% RANGE.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE CAPACITY	THIS	LAST YEAR	15 YEAR AVERAGE 1943 - 57
Taylor	106.2	42.5	77.9	60.9

MEASURED FIRST OF MONTH

SOIL MOISTURE

STATION	DATE OF SURVEY	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	AVERAGE (ALL PAST DATA)
King	11-08	3•3	0.8	1.6	1.8
Maroon	11-03	5•9	2.7	2.7	3.2
Mineral Creek	11-13	5•7	3.4	3.1	3.6
Placita	11-03	9•3	4.7	4.5	5.1

ALL PROFILES 4 FEET DEEP

STREAMFLOW FORECAST (1,000 AC. FT.)

STREAM FORECAST THIS YEAR AND STATION FORECAST APRIL SEPT. GRECAST AVERAGE 1943-57

Gunnison near Grand Jct. 830 60 1386
Surface Cr. at Cedaredge 12 66 18
Uncompander at Colona 110 75 145

This Report Prepared by
Jack N. Washichek and Don W. McAndrew
Soil Conservation Service
Colorado State University
Fort Collins, Colorado

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UNITED STATES

NOTE: • - 1943 - 57 (ADJUSTED AVERAGES)
NS - NO SURVEY
(A) - AIR OBSERVED
(B) - ON ADJACENT DRAINAGE

DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Snow Survey Colorado State University Fort Collins, Colorado

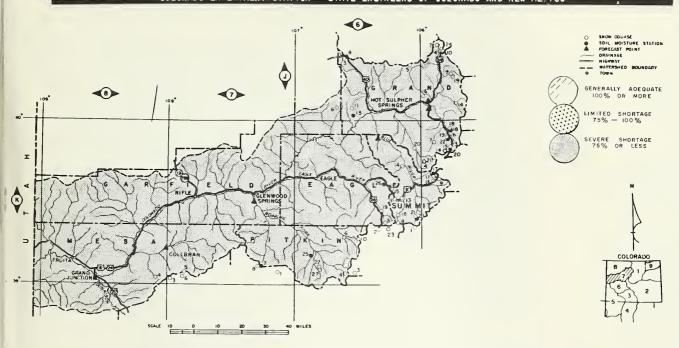
OFFICIAL BUSINESS

COLORADO RIVER WATERSHED IN COLORADO

as of

March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE COLORADO EXPERIMENT STATION - STATE ENGINEERS OF COLORADO AND NEW MEXICO



GENERAL -- MOST DOWNSTREAM AREAS ON THE MAIN STEM OF THE COLORADO RIVER CAN EXPECT WATER SHORTAGES THIS SEASON. THE ROARING FORK AND PLATEAU CREEK WILL SIMILARLY EXPERIENCE SOME SHORTAGES ESPECIALLY IN THE SMALLER TRIBUTARIES AND LATER SEASON.

SNOW -- SNOW PACK ON THE MAIN STEM OF THE COLORADO IS CURRENTLY 64% OF NORMAL. THIS IS A SLIGHT INCREASE PERCENTAGE WISE OVER LAST MONTH. THE SNOW PACK ON THE ROARING FORK IS SOMEWHAT BETTER AT 71% OF AVERAGE. PLATEAU CREEK HAS THE LEAST SNOW IN THE AREA. THE SNOW WATER CONTENT ON THE GRAND MESA AREA IS ONLY 53% OF NORMAL.

RESERVOIR STORAGE -- THE COMBINED STORAGE IN GRANBY AND GREEN MOUNTAIN RESERVOIRS IS CURRENTLY 235,000 ACRE FEET. THIS COMPARES TO A NORMAL OF 269,000 ACRE FEET.

SOIL MOISTURE -- THE SOIL MOISTURE UNDER THE MOUNTAIN SNOW PACK REMAINS NEAR NORMAL. VALLEY SOILS ARE REPORTED IN FAIR CONDITION.

<u>PRECIPITATION</u> -- PRECIPITATION FOR THE FALL MONTHS AVERAGED 75% OF NORMAL. THE EARLY WINTER PRECIPITATION WAS WELL BE-LOW NORMAL. THE VALLEY AREAS RECEIVED LESS THAN ONE-HALF NORMAL AMOUNTS.

FORECASTS -- STREAMFLOW FORECASTS ARE FROM A HIGH OF 71% ON THE COLORADO MAIN STEM TO 56% ON THE LOW SIDE FOR THE PLATEAU CREEK. LATE SEASON WATER SUPPLIES WILL BE SHORT IN THE HEAVY IRRIGATED VALLEY AREAS BELOW RIFLE.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

ISSUED BY: SOIL CONSERVATION SERVICE

F. A. Mark, State Conservationist, Colorado E. A. Nicholson, Area Conservationist
Grand Junction, Colorado
J. L. Hall, Area Conservationist,
Glenwood Springs, Colorado

SNOW		CURRENT INFORMATION			PAST RECORD	
SNOW COURSE	но.	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER C	
			(IIICHES)	(LAST YEAR	1943 - 57
COLORADO RIVER (UPPER)						
Arrow	5 K 6	2-27	33	7.2	8.5	9.0
Berthoud Pass	5K3	2-25	38	8.4	8.6	11.5
Berthoud Summit	5K14	2-29	43	11.6	11.9	14.2×
Blue River	6K2l	2-27	22	5.1	5.1	
Cooper Hill	6K23	2-25	32 ,	5.3	6.7	
Fiddlers Gulch	6K5	2-27	39	8.5	10.5	13.6
Fremont Pass	6K8	2-26	36	6.8	10.6	13.2
Frisco	6K13	2-27	16	2.8	5.5	7.8%
Glen Mar Ranch	6K20	2-26	26	5.6	5.7	7.23
Gore Pass	6J11	2-24	29	5.8	5.2	9.2×
Granby	5J16	2-24	19	3.6	5.0	5.9*
Grand Lake	5J19	2-27	24	3.7	4.4	7.4*
Grizzly Peak	5K9	2-28	35	8.1	12.4	14.9
Hoosier Pass (B)	6K1	2-28	29	6.5	8.4	10.0
Jones Pass	5K21	2-25	34	7.3	7.9	10.0
Lake Irene	5J10	Est.	50	12.5	15.9	18.6
	5K7	2-26	26	5.3		
Lapland	5J7	2-27	41	10.0	7.4	10.3
Lulu	1				10.9	13.9
Lyns Pass	6K6	2-24	35	7.5	6.9	10.6
McKenzie Gulch	6K28	2-24	20	3.4	2.4	
Middle Fork Camp Ground	5K4	Est.	24	6.0	6.1	8.0
Milner Pass	5J24					11.2*
Monarch Lake	5J14	3-01	27	5.0	6.0	10.8%
North Inlet Grand Lake	5J9	Est.	18	4.0	4.8	8.0
Pando	6K19	2-27	30	7.1	4.7	9.9*
Phantom Valley	5J4	2-27	28	5.8	5.5	8.9
Ranch Creek	5K18	2-27	25	4.5	6.0	
Shrine Pass	6K9	2-27	40	9.3	10.7	14.0
Snake River	5K16	2-26	22	4.1	6.2	7.9%
Summit Ranch	6K14	Est.	20	4.5	5.2	6.9×
Tennessee Pass	6K2	2-27	27	5.1	7.1	7.9
Vail Pass	6K15	2-27	34	8.7	12.1	16.5*
Vasquez Creek	5K19	2-26	33	7.0	6.6	
Willow Creek Pass	6J5	2-27	29	6.4	8.3	10.8
ROARING FORK RIVER						
Aspen	7J22	2-22	38	9.1	7.5	
Independence Pass Tunnel	6K4	2-27	35	8.9	10.2	14.3
Ivanhoe	6 K1 0	2-24	48	9.4	10.6	15.7*
Lift	7K27	2-22	39	8.6	6.4	
McClure Pass (A)	7K8	2-29	37	10.0	14.6	13.5*
Nast	6K6	2-27	21	2.7	3.0	6.0
North Lost Trail (A)	7Kl	2-29	41	9.8	10.3	8.0
PLATEAU CREEK						
Alexander (A) (B)	7K3	2-29	38	9.1	11.7	17.6
Mesa Lakes	7K4	2-27	37	8.2	6.9	13.2
Park Reservoir (A) (B)	7K6	2-29	39	10.5	16.0	20.9
Trickle Divide (A)	7K5	2-29	44	11.4	14.3	22.2
NOTE: • - 1943 - 57 (ADJUSTED AVERAGES)	(11)	~ ~/	***	TT #4	140)	22.02

Trickle Divide (A)

NOTE: * . 1943 - 57 (ADJUSTED AVERAGES)
NS . NO SURVEY
(A) . AIR OBSERVED
(B) . ON ADJACENT DRAINAGE

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UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE
Snow Survey

Colorado State University
Fort Collins, Colorado

OFFICIAL BUSINESS

RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE CAPACITY	THIS YEAR	LAST YEAR	15 YEAR AVERAGE 1943 - 57
Granby* Green Mt.	465.5		311.6	201.3

MEASURED FIRST OF MONTH

SOIL MOISTURE

STATION	DATE OF SURVEY	(INCHES)	THIS YEAR	LAST YEAR	AVERAGE (ALL PAST DATA)
	12-05	3.9	3.0	2.3	2.6
Blue River	11-05	4.2	3.6	2.1	2.7
Gore	11-18	4.9	2.1	2.1	2.5
Grand Mesa	11-01	12.5	8.4		
Maroon	11-03	5.9	2.7	2.7	3.2
Muddy Pass	11-13	11.1	6.2	5.6	6.4
Placita	11-03	9.3	4.7	4.5	5.1
Ranch Creek	12-05	8.7	6.0	5.4	6.2
Vail Pass	12-01	12.3	3.8	7.6	7.4
Vasquez Siphon	12-15	11.0	7.7	7.0	7.4

ALL PROFILES & FEET DEEP

STREAMFLOW FORECAST (1,000 AC. FT.)

APRIL THROUGH SEP	LEMDER		
STREAM AND STATION	FORECAST APRIL - SEPT,	THIS YEAR % AVERAGE	AVERAGE 1943-57
Blue River abv. Green Mt.	180	62	290
Colo. R. nr. Granby (4)	152	65	235
Colo. R. at Glenw. Spg. (5	1100	71	1546
Plateau Cr. Nr. Collbran	32	56	57
Roar. Fk. at Gl. Sprg.(6)	525	65	803
Williams Fk nr. Parshall	56	64	78
Willow near Granby	26	59	44
1 01 1 11			

- (4) Observed flow plus diversions by Adams tunnel and Grand River ditch plus change in storage in Granby Reservoir.
- (5) Observed flow plus the changes as indicated in (4) plus Moffat Ditch.
- (6) Observed flow plus diversion through Twin Lakes tunnel

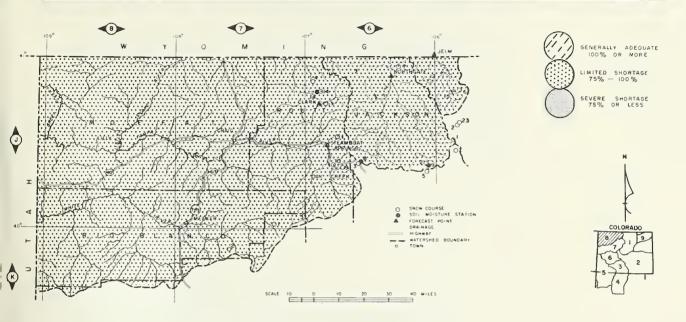
This Report Prepared by

Jack N, Washichek and Don W, McAndrew Soil Conservation Service Colorado State University Fort Collins, Colorado

YAMPA, WHITE, AND NORTH PLATTE RIVERS WATERSHEDS IN COLORADO

as of March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE



GENERAL -- WATER SUPPLIES ON THE YAMPA AND WHITE RIVERS SHOULD BE ADEQUATE FOR ALL BUT THE LATE SEASON DEMANDS THIS SEASON.

SOME SHORTAGES MIGHT EXIST ON THE VERY SMALL TRIBUTARY STREAMS TO THESE RIVERS. THE NORTH PARK AND LARAMIE RIVER VALLEYS

SHOULD ALSO HAVE ADEQUATE IRRIGATION WATER WITH ONLY LATE SEASON SHORTAGES FORECASTED.

SNOW -- THE SNOW PACK OVER THE AREAS COVERED BY THIS REPORT IS THE BEST IN THE STATE. WATER CONTAINED IN THE SNOW IS ABOUT 75 TO 80% OF NORMAL FOR THIS DATE. THE SITUATION REMAINS GENERALLY BETTER OVER THE ENTIRE NORTHERN AREA OF THE STATE THAN LAST YEAR AT THIS TIME.

SOIL MOISTURE -- SOIL MOISTURE UNDER THE SNOWPACK IS ABOUT AVERAGE OVER THE ENTIRE BASIN. MOST AREAS ARE BETTER THAN LAST YEAR AT THIS TIME.

STREAMFLOW -- FORECASTED STREAMFLOWS ARE IN THE 80% RANGE FOR THE MAJORITY OF THE AREA. THE LITTLE SNAKE AND LARAMIE RIVERS ARE SLIGHTLY BELOW THIS FIGURE. THE YAMPA RIVER AT MAYBELL IS FORECAST AT 700,000 ACRE FEET FOR THE APRIL-SEPT-EMBER PERIOD.

PRECIPITATION -- PRECIPITATION OVER THESE BASINS AVERAGED 60 TO 75% OF NORMAL FOR THE LATE FALL AND EARLY WINTER MONTHS.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

5	WONG		CURRE	T INFORMA	TION	PAST R	ECORD
	SNOW COURSE	NO.	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER C	(5)
ļ			00111	(Inches)	Tineries	LAST YEAR	AVERAGE 1943 - 57
I	NORTH PLATTE RIVER						
1	Cameron Pass (A)	5J1	2-28	66	19.1		18.0
ļ	Columbine Lodge	6J3	2-26	53	14.1	17.3	19.6
l	Deadman Hill (A) (B)	5J6	2-28	52	13.0		12.2
l	McIntyre (B)	5J15	2-21	28	4.0		9.3*
ł	Northgate	6J7	2-27	21	4.0	3.4	5.3*
l	Park View	6J2	2-27	24	5.2	5.8	7.7
ı	Roach (A) (B)	6J12	2-23	42	7.9		15.7
ł	Willow Creek Pass (B)	6J5	2-27	29	6.4	8.3	10.8
١	YAMPA RIVER						
ı	Bear River	7J3	NS	۵/		,	
١	Clark (A)	6J13	2-28	36	9.4	6.4	
I	Columbine Lodge (B)	6J3	2-26	53	14.1	17.3	19.6
I	Dry Lake (A)	6J1	2 - 28 2 - 28	53 56	14.6	12.5	17.1
I	Elk River (A)	6J4		90	15.1	8.5	15.1
I	Hahn's Peak	6J14	NS	25	~ -	-	70 /
Į	Lynx Pass (B)	6J6 6J9	2-24	35	7.5	6.9	10.6
Ì	Rabbit Ears	6J10	2 - 26 2 - 26	63 40	16.5	13.1	22.0*
I	Yampa View WHITE RIVER	O1 TO	2-20	40	9.9	9.1	12.0×
١	Burro Mountain (A)	7K2	2-29	41	9.8	10.9	14.6
1	Rio Blanco	7J1	2-24	33	10.1	6.5	13.1
ı	RIO BIANCO	10 T	~ ~4		10.1	0.5	1).1
1							
ı							
1							
ı						i	

SOIL MOISTURE

STATION	OF SURVEY	CAPACITY (INCHES)	THIS	LAST YEAR	AVERAGE (ALL PAST DATA)		
Hahn's Peak Iaramie Road Muddy Pass Two Mile Willow Pass	11-13 11-05 11-13 11-19 11-18	19.0 12.4 11.1 9.1 9.5	13.3 7.1 6.2 4.2 7.3	4.1	7.6 6.4 5.8 6.8		

ALL PROFILES 4 FEET DEEP

STREAMFLOW FORECAST (1,000 AC. FT.)

APRIL THROUGH SEPT	APRIL THROUGH SEPTEMBER							
	FORECAST APRIL -	THIS YEAR % AVERAGE	AVERAGE 1943-57					
Elk at Clark Laramie at Jelm Little Shake at Lilly North Platte at Northgate White at Meeker Yampa at Steamboat Sprgs.	180 80 220 265 220	83 71 63 — 79 78	215 113 350 255 335 283					

NOTE: • - 1943 - 57 (ADJUSTED AVERAGES)
NS - NO SURVEY
(A) - AIR OBSERVED
(B) - ON ADJACENT DRAINAGE

This Report Prepared by
Jack N. Washichek and Don W. McAndrew
Soil Conservation Service
Colorado State University
Fort Collins, Colorado

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DEPARTMENT OF AGRICULTURE

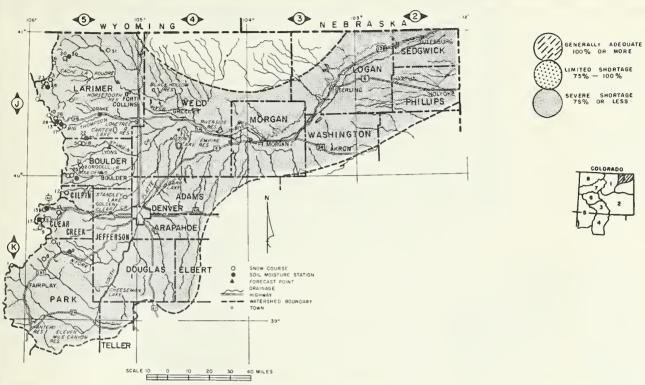
SOIL CONSERVATION SERVICE Snow Survey Colorado State University Fort Collins, Colorado

OFFICIAL BUSINESS

LOWER SOUTH PLATTE RIVER WATERSHED IN COLORADO

as of March 1, 1964

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE COLORADO EXPERIMENT STATION - STATE ENGINEERS OF COLORADO AND NEW MEXICO.



GENERAL -- WATER SUPPLY OUTLOOK WAS IMPROVED SLIGHTLY DURING FEBRUARY. SPOTTY SNOW MAKES FORECASTING DIFFICULT. SOME AREAS ARE INDICATING RATHER HIGH SNOW WHILE RIGHT NEXT DOOR THE SNOW PACK IS LIGHT. THERE WILL BE SHORTAGES OF WATER OVER THE ENTIRE BASIN, EXPECIALLY LATE IN THE SUMMER.

SNOW — SNOW PACK WAS SLIGHTLY IMPROVED DURING FEBRUARY. ALTHOUGH THE SNOW FALL IS STILL MUCH BELOW NORMAL. THE ENTIRE SOUTH PLATTE BASIN NOW HAS ABOUT 65% OF NORMAL SNOW. NOT MUCH TIME REMAINS TO BUILD THE MUCH NEEDED SNOW PACK. CURRENT SNOW FALL IN THE PLAINS AREA IS SLIGHTLY BETTER THAN AVERAGE.

RESERVOIR STORAGE -- WATER STORED IN THE MAJOR RESERVOIRS ON THE LOWER SOUTH PLATTE SYSTEM IS CURRENTLY ABOUT 85% OF NOR-MAL FOR THIS DATE. THIS IS LESS WATER THAN LAST YEAR BUT IT WILL STILL BE A GREAT AID FOR THE ANTICIPATED LOW STREAM FLOWS THIS COMING IRRIGATION SEASON.

SOIL MOISTURE -- SOIL MOISTURE IN THE MOUNTAINS IS BELOW NORMAL AS WAS THE FALL PRECIPITATION. SOME OF THE HIGH ELEVATION PRECIPITATION STATIONS INDICATED LESS THAN A THIRD OF NORMAL FALL RAINFALL.

FORECASTS -- FORECASTS ARE UP SLIGHTLY FROM A MONTH AGO, BUT STILL IN THE CRITICAL AREA. FORECAST RANGE FROM 65% OF NOR-MAL ON CLEAR CREEK TO 74% OF NORMAL ON THE BIG THOMPSON.

<u>PRECIPITATION</u> — PRECIPITATION IN THE SOUTH PLATTE VALLEY RANGED FROM 76 TO 33% OF NORMAL FOR THE FALL AND EARLY WINTER MONTHS.

"THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY"

\$NOW		CURRE	NT INFORMA	TION	PASTR	ECORO
SNOW COURSE	NO.	OATE OF SURVEY	SNOW OEPTH (INCHES)	WATER CONTENT (INCHES)	WATER C (INCHE LAST YEAR	ES)
SOUTH PLATTE RIVER AND TRIBUTARIES Baltimore Berthoud Falls Big South Boulder Falls Cameron Pass (A) Chambers Lake Copeland Lake Deadman Hill (A) Deer Ridge Empire Geneva Park Grizzly Park Hidden Valley Hoosier Pass Hour Glass Lake Jefferson Creek Lake Irene (B) Long's Peak Lost Lake Loveland Pass Loveland Lift No. 1 Pine Creek Red Feather Two Mile University Camp Ward	5K23 5K13 5J3 5J2 5J1 5J2 5J18 5J6 5J17 5K10 5K11 5K9 5J13 6K1 5J11 5K8 5J10 5J22 5J23 5K5 5J22 5J23 5K5 5J21 5J20 5J26 5J26 5J27 5J20 5J27 5J20 5J27 5J27 5J27 5J27 5J27 5J27 5J27 5J27	OF	OEPTH	CONTENT	(INCHE	11.8* 2.2 10.3* 18.0 7.0 4.9* 12.2 4.9* 5.0* 14.9 10.0 6.6 10.1* 10.4* 12.5 6.9 11.9* 17.7 5.6*

STREAMFLOW FORECAST (1,000 AC. FT.)

APRIL THROUGH SEPT	EMBER		
STREAM ANO STATION	FORECAST APRIL - SEPT.		AVERAGE 1943-57
Cache La Poudre at Can.(1 Big Thompson at Drake(2) Saint Vrain at Lyons Boulder at Orodell Clear Creek at Golden (3)	78 55 39	69 74 65 70 73	189 106 84 55 137

- (1) Observed flow minus diversions from Michigan, Colorado and Laramie rivers, plus diversions for irrigation and municipal use above station.
- (2) Observed flow plus by-pass to power plants.
- (3) Observed flow minus diversions through Jones Tunnel.

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DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE
Show Survey
Colorado State University
Fort Collins, Colorado

OFFICIAL BUSINESS

RESERVOIR STORAGE (1,000 AC. FT.)

	MEASUREO FIRST OF MONTH					
RESERVOIR	USABLE CAPACITY	THIS YEAR	L AST YEAR	15 YEAR AVERAGE 1943 - 57		
Carter * Cheeseman Eleven Mile Empire Horsetooth* Jackson Lake Julesburg Point of Rocks Prewitt Riverside	108.9 79.0 97.8 37.7 143.5 35.4 28.2 70.0 30.0 57.5	78.9 22.6 60.5 31.7 81.7 30.2 19.0 31.7 9.6 48.1	87.2 42.9 96.8 31.2 91.6 32.0 20.1 70.0 29.5 59.0	63.7 47.6 69.3 26.6 88.0 30.6 20.5 51.2 18.6 42.6		

SOIL MOISTURE

STATION	OATE OF SURVEY	(INCHES)	THIS YEAR	LAST YEAR	AVERAGE (ALL PAST DATA)	
Alpine Camp Beaver Dam Feather Guard Station Hoop Creek Hoosier Pass Kenosha Pass Laramie Road Two Mile	11-20 11-19 11-05 11-20 12-01 11-05 11-05 11-05 11-19	6.9 7.1 10.1 6.9 4.9 7.8 4.4 12.4 9.1	3.3 3.3 4.2 3.1 3.6 4.9 2.8 7.1 4.2	2.9 3.2 4.0 2.7 2.9 4.0 1.9 6.2 4.1	3.5 3.8 4.6 3.4 2.7 5.1 2.6 7.6	

ALL PROFILES 4 FEET OFER

LIST OF COOPERATORS

The following organizations cooperate in snow surveys for the Colorado, Platte, Arkansas and Rio Grande watersheds. Many other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

STATE

Colorado State Engineer
New Mexico State Engineer
Nebraska State Engineer
Colorado Experiment Station
Rocky Mountain Forest and Range Experiment Station

FEDERAL

Department of Agriculture

Forest Service Soil Conservation Service

Department of Interior

Bureau of Reclamation Geological Survey National Park Service Indian Service

Department of Commerce

Weather Bureau

War Department

Army Engineer Corps

Atomic Energy Commission

INVESTOR OWNED UTILITIES

Colorado Public Service Company Western Colorado Power Company Public Service Company of New Mexico

MUNICIPALITIES

City of Denver City of Boulder

WATER USERS ORGANIZATIONS

Arkansas Valley Ditch Association Colorado River Water Conservation District

IRRIGATION PROJECTS

Farmers Reservoir and Irrigation Company San Luis Valley Irrigation District Santa Maria Reservoir Company Costilla Land Company Uncompangre Valley Water Users' Association Twin Lakes Reservoir and Canal Company UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
240 SOUTH HALL
COLORADO STATE UNIVERSITY
FORT COLLINS, COLORADO 80521

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FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"